

Serial No.: 10/697,511

Atty Dckt: MIO 0092 VA/40509.271

Remarks

By this response, claims 1, 7, and 18 are amended. No new matter has been entered. Accordingly, claims 1-19 are pending in this application.

The Examiner has rejected claim 18 under 35 USC 102(e) as being anticipated by Hwang et al. (US 6,634,314). Claims 1, 3, 4, 6-13, 17 and 18 are rejected under 35 USC 103(a) as being unpatentable over Miller et al. (US 6,200,389) in view of Askary et al. (US 4,774,416). Claims 5 and 14-16 are rejected as being unpatentable over Miller et al. and Askary et al. as applied to claims 1, 3, 5, 6-13, 17 and 18, and further in view of Elliott et al. (US 5,669,979). Claims 2 and 19 are rejected as being unpatentable over Miller et al. and Askary et al. as applied to claims 1, 3, 4, 6-13, 17 and 18, and further in view of Nakayama et al. (US 4,924,807). Claim 18 is further rejected under 35 USC 103(a) as being unpatentable over Elliott et al. in view of Sakuma et al. (US 5,270,247) and Nachshon (US 5,114,834). Claim 19 is also rejected as being unpatentable over Elliott et al., Sakuma et al. and Nachshon as applied to claim 18, and further in view of Nakayama et al.. These rejections are respectfully traversed.

Claim 1 has been amended to recite the limitation of "to provide a flow of said input gas over the workpiece in a direction away from said precursor gas." Claim 18 has been amended to recite the limitation of "a first gas port adapted to provide a flow of an input gas over the surface of the workpiece to be dissociated by a radiation beam into a point of use generated reactive species, and configured to provide the flow of the input gas in a direction away from a direct flow of a precursor gas."

Hwang et al. teach that their plurality of vapor injection pipes 308a to 308d have a plurality of open holes 307 directed toward the substrate 314 in order to apply different vapor substances onto the substrate. See col. 4, lines 41-50, and FIG. 3. As such, not one of the gas flows from the injection pipes 308a-308d is directed away from any of the other gas flows. Accordingly, the anticipatory rejection has been overcome as Hwang et al. fail to teach or suggest all the limitations of amended claim 18.

Serial No.: 10/697,511

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Miller et al. teach having a gas distribution channel 18 in an injector 10 that provides a gas onto the surface of the substrate 16 as generally shown by the arrows in FIG. 2. A plurality of such channels 18 are illustrated in FIG. 3. See col. 5, lines 36-58, and also FIGS. 4-19. As such, not one of the gas flows from the channels 18 of Miller et al. is directed away from the other gas flows. Askary et al. teach providing highly directional, low divergence beams of reactive species 38 to a substrate. The beams are provided perpendicular from a plurality of micro channels in a plate 30 to the surface of the substrate as shown in FIG. 1, or at an angle with crossing beams as shown in FIG. 3. As such, not one of the gas flows from fixture 24 is directed away from the other gas flows. Accordingly, the combined teachings of Miller et al. and Askary et al. fail to disclose or suggest all the limitations of amended claims 1 and 18.

Elliott et al. disclose providing input gases 134, 136 (FIG. 6) towards each other. Sakuma et al. disclose providing a supply gases through a vent pipe 7 from a manifold 5 used to accept multiple gas inputs 6. See Fig. 1. Nachshon teaches carrying out the process of removing a photoresist in a reactive vapor environment. No other input gas is mentioned. As such, not one of the gas flows in Elliott et al., Sakuma et al., or Nachshon is directed away from the other gas flows. Accordingly, the combined teachings of Elliott et al., Sakuma et al., and Nachshon fail to disclose or suggest all the limitations of amended claims 18.

Nakayama et al. disclose providing flows of gases Q and R towards each other. See FIG. 6. Accordingly, the combined teachings of Elliott et al., Sakuma et al., Nachshon, and Nakayama et al. fail to disclose or suggest all the limitations of amended claims 18.

Accordingly, in view of the above amendments to independent claims 1 and 18, the remaining rejections to the dependent claims are believed moot as none of the cited art individually or taken together, teach or suggest providing a flow of an input gas in a direction away from a precursor gas. Withdrawal of all the rejections is respectfully requested.

The Applicant respectfully submits that, in view of the above amendments and remarks, the application is now in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application

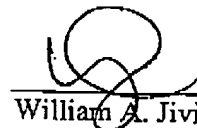
Serial No.: 10/697,511

Atty Dckt: MIO 0092 VA/40509.271

or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,
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By



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